

Clayton G. Loosli, M.D., Ph.D.
Hastings Professor of Medicine & Pathology
School of Medicine
University of Southern California
2025 Zonal Avenue
Los Angeles, California 90033

Effects of Fresh Cigarette Smoke Inhalation on the Respiratory Tract of Mice.

This is a continuation of studies of Effects of Fresh Cigarette Smoke Inhalation on the Respiratory Tract of SWR/J, C57L/J and C57B1/6J male mice. At approximately two months of age, these mouse strains were exposed to fresh cigarette smoke from one cigarette, four times a day, for 17, 21 and 24 months respectively. Compared to lungs of sham and shelf controls, the smoke-exposed mice showed chronic bronchitis, characterized by bronchial epithelial cell hyperplasia, alveolar epithelialization, peribronchial and perivascular round cell infiltration, and alveolar macrophage collections. The lung reactions were most severe in the SWR/J mice and least in the C57B1/6J mice. Pulmonary adenomas were present in 38% of smoke-exposed and 25% of control SWR mice. However, the control mice were two months younger than the smoke-exposed when sacrificed. Thus, the presence of adenoma in the lungs of smoke-exposed mice could be related more to age and tumor susceptibility than to cigarette smoke. No pulmonary adenomas were present in either smoke-exposed or control C57R/J mice. In 72 C57B1/6J exposed mice there were six lung tumors (three bronchial adenomas and three alveolar adenomas) and none in 38 controls. More control mice of similar age need to be studied to determine the natural incidence of tumors in this strain.

Studies are planned to see if cigarette smoke inhalation makes animals more susceptible to airborne Sendai virus infections. Also, studies to determine if myxoviruses are cocarcinogenic agents are being planned. Vitamin A deficient and normal C57B1/6J mice previously given subcutaneous injections of benzpyrene will be, along with controls, subjected to sublethal aerosols of PR8A and Sendai viruses. The post-influenzal nodules will be studied for carcinogenic properties.

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